

EDUCATION**Nursing & Health Sciences Research Journal**Journal Access: <https://scholarlycommons.baptisthealth.net/nhsrj/>**Formulating Well-Written Clinical Practice Questions and Research Questions**

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INTRODUCTION

Incorporation of evidence-based practices (EBP) to provide the best patient care is an expectation in nursing (Polit & Beck, 2021). New knowledge (evidence generated through nursing research) and translation of the evidence using EBP models align with this expectation. Recent evidence suggests EBP/research education and training have positive impacts on nurses' attitudes, beliefs, and use of EBP and participation in research (Black et al., 2019; Cardoso et al., 2021; Duffy et al., 2016; Engerelli & Belirlenmesi, 2019; Keib et al., 2017; Koota et al., 2020; Rholdon et al., 2021). Furthermore, nurses' involvement in research studies beyond participation as data collectors provides hands-on learning opportunities thereby increasing knowledge and encouraging positive attitudes towards EBP and research (Fowler & Brown, 2020; Wentland & Hinderer, 2020). While hands-on learning provides an opportunity to apply knowledge, a foundation of EBP and research knowledge is needed before execution or application. A literature search revealed no articles that addressed two-fold education on both clinical practice questions and research questions to provide side-by-side comparisons of the two methods of inquiry and guidance for writing well-written questions. As such, the objectives of this article are to provide:

1. A brief overview of EBP and research processes (purposes, similarities and differences, relationship, and steps or stages), and
2. Guidance for generating well-written clinical practice and research questions.

AN OVERVIEW OF EBP AND RESEARCH

The EBP process and research are methods of inquiry, each serving a distinct purpose but closely related to each other (Figure 1). Research is a systematic and disciplined method of inquiry that addresses a knowledge gap in the literature (Polit & Beck, 2021; Tappen, 2016). Research studies follow one of three methods or approaches: quantitative, qualitative, or mixed methods (Creswell & Creswell, 2018). The purpose of research is to add to the nursing body of knowledge (i.e. fill a gap). The research process is the systematic method for filling the gap.

Table 1 shows the major stages for systematically conducting a research study (Tappen, 2016). Following selection of a topic or issue, the next stage is stating the problem based on review of the literature, which includes defining the problem or issue, synthesizing what is known from the current literature, and identifying what else needs to be learned (the gap). Reviewing the discussion section of published studies, specifically the limitations and recommendations for future research, is a recommended strategy for finding a gap in the literature. The next stage of the research process is defining the research project by writing a well-written research question or hypotheses. The following stage is establishing the significance of the study, starting broadly (the impact on nursing practice – empirical evidence) and then more specifically leading to the purpose statement of the research study. After that, it is time for designing, conducting, and data analysis with interpretation (i.e. the answer to the research question). The last stage of the research process is dissemination (sharing the results), which facilitates access of the research study within the nursing community. Disseminated knowledge is utilized in EBP and is

labeled as external evidence within the context of EBP (Melnik & Fineout-Overholt, 2019). However, external evidence is not the sole source of evidence used in EBP.

Evidence-based practice is the integration of the best evidence, clinical expertise, and patient values and preferences for clinical decision-making to improve outcomes for individuals, communities, and systems (Melnik & Fineout-Overholt, 2019). The purpose of the EBP process is to make recommendations for and implement change in nursing practice (Melnik & Fineout-Overholt, 2019; Polit & Beck, 2021). Evidence-based practice models provide guidance for nurses to evaluate current practices for clinical relevance (i.e., identify practices that are tradition-based [“sacred cows”] or outdated, unnecessary, and/or harmful) to make necessary practice changes (Bourgault & Upvall, 2019; Cavlovich, 2016; Clark, 2019; Hanrahan et al., 2015; Makic et al., 2011; Makic et al., 2013; Makic et al., 2014; Upvall et al., 2019). While nurses have several EBP model options (Table 2), each model generally follows “The 5As” mnemonic: ask, acquire, appraise, apply, and assess (Guyatt et al., 2015; Polit & Beck, 2021). The first step, ask, is formulation of a clinical practice question. The next step is acquire, which is to search for and obtain external (empirical) evidence from the literature and internal evidence based on clinical expertise and patient values/preferences (Table 3) (Melnik & Fineout-Overholt, 2019; Polit & Beck, 2021). Appraise involves review and evaluation of the external evidence’s quality and level. Next, the integration of external and internal evidence leads to apply – planning and implementation of the practice change. The last step is assess: evaluation of the outcome of the practice change.

CLINICAL PRACTICE QUESTION AND RESEARCH QUESTION: SIMILARITIES AND DIFFERENCES

Clinical practice and research questions both begin with an inquiry related to a problem or issue in nursing. While the clinical practice question and the research question are similar in that they guide the method of inquiry, the timing of the question occurs at different stages of project/study development. In research, question generation occurs after the literature search/review with its development based on an identified gap in the literature; the answer to this question arises from the results of the rigorous research process

resulting in new knowledge (external evidence) (Figure 1). The research question guides selection of the research method, design, and data analysis plan and development of implications and recommendations for practice.

In EBP, the clinical practice question is generated before the literature search serving as a guide to the search to find a targeted, empirically based answer, followed by integration of the external evidence with internal evidence (clinical expertise and patient values/preferences) (Figure 1). The clinical practice question subsequently guides the planning, implementation, and evaluation of a practice change (Figure 1). Because clinical practice and research questions related to methods of inquiry are crucial to the respective EBP and research processes, generating well-written questions is key.

COMPONENTS OF WELL-WRITTEN QUESTIONS

The Research Question

Good research questions are complex involving critical thinking and are relevant, focused, and feasible (Mattick et al., 2018; McCombes, 2019). The FINER criteria is a useful tool for writing good research questions (Cummings et al., 2013); FINER is an acronym for feasible, interesting, novel, ethical, and relevance.

Feasible

Feasibility entails asking a research question that is practically answerable:

- Are there enough resources to conduct the study (e.g. time, money, equipment, and/or human support)?
- Is it possible to obtain the minimum number of subjects/participants needed to achieve statistical significance?
 - ◊ For quantitative research, a power analysis is used to determine minimum sample size (Prajapati et al., 2010; Tappen, 2016).
- Is the planned timeframe appropriate and affordable?

Another approach for determining feasibility is a priori identification of the study’s potential limitations to determine the degree to which these limitations will significantly impact the study (Haynes, 2016).

Interesting

Interest of the topic is another aspect to consider when writing a research question: Does this topic engage the principal investigator? Will this topic attract/engage readers? Will this question help investigate and present a different or new perspective of the problem?

Novel

Novelty of the topic is key. “Research should not be conducted for the sake of doing research” (Haynes, 2016, p. 18). Good research questions when answered add new knowledge: Will the answer to the research question resolve a gap in the existing literature? Will it generate new hypotheses? Will it present new findings?

Ethical

Most research studies undergo reviews by institutional review boards or ethics review committees, or the equivalent, to ensure human protections of subjects or participants. Therefore, considering ethical conduct in research when generating a question is imperative: Is the answer to this question achievable without compromising ethical conduct in research? (Haynes, 2016). Some research questions are not answerable due to crossing ethical boundaries (e.g. Tuskegee Syphilis Study conducted circa 1932 to 1972).

Relevance

To establish relevance of a topic or issue, Mattick et al. (2018) advise using the following questions as a guide: “What will happen if this research is not done – does it really matter?” and “Who will benefit from it?” (p. 105). Additional guidance for establishing relevance is gaining familiarity with current literature on the topic/issue and journal/funding organization research priorities (Mattick et al., 2018; McCombes, 2019). Keeping abreast of the literature helps with identification of a gap, thus strengthening the relevance of the study.

Additional Guidance

Good research questions are also focused and specific. McCombes (2019) recommends using interrogative words such as “how” and “what”, to promote question specificity and meaningful results. A template for writing research questions related to research methods/designs is provided in Table 4.

The Clinical Practice Question

The vast amount of literature search results nurses may encounter, on any given topic or issue in nursing, may be overwhelming (Cline et al., 2017). The clinical practice question plays a significant role in narrowing down the literature search results; therefore, the results of the search depend on a well-written question (Melnik & Fineout-Overholt, 2019). Using the PICOT format is a strategy used to generate a well-written clinical practice question (P = Population, patient, or problem; I = Intervention, issue, influence, or exposure; C = Comparison; O = Outcome; T = Time) (Table 5) (Melnik & Fineout-Overholt, 2019; Polit & Beck, 2021). There are five PICOT format types: intervention, etiology, diagnosis, prognosis/prediction, and meaning; Table 6 contains the descriptions of the types with suggested templates (Melnik & Fineout-Overholt, 2019). Once the clinical practice question has been written in PICOT format, its components can be used as key words to help conduct a literature search that provides specific external evidence to answer the clinical practice question (Melnik & Fineout-Overholt, 2019; Polit & Beck, 2021). Table 7 includes example PICOT questions and keywords for guiding the literature search.

SUMMARY

Evidence-based practice and research are integral to nursing practice. While EBP and research are distinct methods of inquiry, they are related; external evidence (new knowledge) generated by research studies is integrated with internal evidence in the EBP process to implement best practice changes. Studies have shown that increasing nurses’ EBP and research knowledge promotes positive attitudes towards use of EBP and participation in research studies beyond data collection. The focus of this article was to provide foundational EBP and research education and instruction with a brief overview of each method of inquiry, comparing and contrasting between EBP and research, and to provide guidance for writing clinical practice and research questions. Using the guidance in this article, nurses are equipped with the foundational knowledge necessary for understanding and differentiating between EBP and research, and generating well-written clinical practice questions (PICOT format) and research questions (FINER Criteria) to guide the journeys of practice change

implementation and generation of new nursing knowledge.

DECLARATION OF INTEREST

The author reports no conflicts of interest. The author alone is responsible for the content and writing of the paper.

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Table 1*The Major Stages of Research*

Stage	Description
Statement of the problem	Define the problem or area of interest What is known? What is not known (i.e. knowledge gap)?
Define the research project	Write a clearly defined research question or hypotheses
Significance of the problem	Why is this important? (i.e. the “so what” factor) What is the potential impact of the results?
Study Design and data analysis plan	Quantitative, qualitative, or mixed methods? Exploratory, descriptive, correlational, comparative? Retrospective, cross-sectional, prospective? Sample, site, recruitment plan, data collection plan? Based on the method, how will data be analyzed?
Conduct the study and data analysis	
Disseminate findings	What are the conclusions, limitations, implications for practice, and recommendations for future research?

Reference: Tappen (2016); adapted with permission.

Table 2*Evidence-Based Practice Models*

Year	EBP Model	Author(s)
1998	Conceptual Framework for Evidence-Based Practice	Kitson, Harvey, & McCormack
2001	The Iowa Model of Evidence-Based Practice	Titler et al.
2001	The Stetler Model of Evidence-Based Practice	Stetler
2004	The PARHIS Framework	Rycroft-Malone
2007	Clinical Excellence through Evidence-Based Practice (CETEP)	Collins et al.
2012	The ACE Star Model of Knowledge Transformation [®]	Stevens
2019 ^(4th ed.)	Advancing Research and Clinical Practice through Close Collaboration (ARCC)	Melnik & Fineout-Overholt
2021 ^(4th ed.)	The Johns Hopkins Evidence-Based Practice (JHEBP) Model for Nurses and Healthcare Professionals	Dang et al.

Table 3*Components of EBP Internal Evidence*

Clinical Expertise <i>Melnik & Fineout-Overholt, 2019; Polit & Beck, 2021</i>	Patient Values/Preferences <i>Polit & Beck, 2021</i>
Clinical judgment	Preferences related to Treatment Types
QI/PI project outcomes	Involvement in Decision-Making
Clinical reasoning	Priorities related to Quality of Life Issues
Evaluation and use of available healthcare resources to achieve expected patient outcomes	Social-Cultural Considerations Spiritual-Religious Values

Table 4*Example Research Questions with Research Methods, Types, Designs, and Templates*

Method	Types	Templates	Examples
Qualitative or Quantitative	Exploratory and/or Descriptive	What are the main factors in <i>X</i> ?	What are the main factors contributing to patients' pre-operative anxiety?
		How does <i>X</i> experience <i>Y</i> ?	How do patient family members experience being present during resuscitation efforts?
		What is the role of <i>X</i> in <i>Y</i> ?	What is the role of debriefing with nurses after an emergency event? What is the role of lactation consultant in promotion of exclusive breast milk feeding?
		What are the characteristics of <i>X</i> ? What is/are <i>X</i> 's perception(s) of <i>Y</i> ?	What are the characteristics of compassion fatigue in nurses? What are patients' perceptions of the pre-operative experience?
	Descriptive Comparative	What are the differences and similarities between <i>X</i> and <i>Y</i> ?	In patients with ARDS, what are the differences and similarities between manual proning and mechanical proning on patient outcomes?
Quantitative	Descriptive Correlational	What is the relationship between <i>X</i> and <i>Y</i> ?	What is the relationship between work environment and moral distress in nurses?
	Explanatory (Experimental & Quasi- experimental)	What is the impact (or effect) of <i>X</i> on <i>Y</i> ? What are the causes of <i>X</i> ?	What is the impact of <i>in situ</i> training sessions on nurses' confidence with initiating a rapid response call? What are the causes of burnout in nursing?

Reference: McCombes (2019); Adapted with permission.

Table 5*Using PICOT Formatting to Write a Clinical Practice Questions*

Component	Description
P = Population, patients, or problem (disease) of interest	Identify the key characteristics of the population or patients <i>e.g. age, gender, ethnicity, certain disease, etc.</i>
I = Intervention, issue, influence, or exposure	What is the intervention of interest? or What is a potentially harmful or beneficial influence? <i>e.g. therapy, exposure to disease, prognostic factor, risk behaviors, etc.</i>
C = Comparison	What is the comparison intervention or influence?
O = Outcome	What is the outcome or consequence of interest?
T = Time	Time involved to demonstrate the outcome <i>e.g., time to achieve outcome or time within which the population is observed for the outcome</i>

References: Melnyk & Fineout Overholt (2019); Polit & Beck (2021).

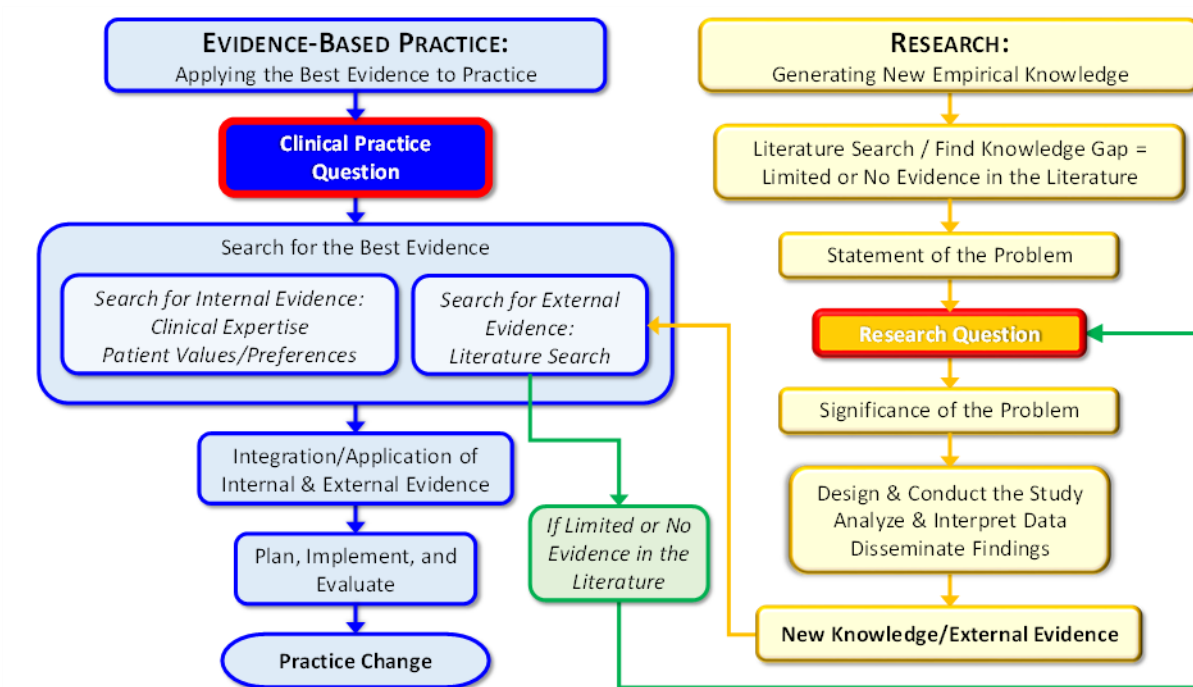
Table 6*Types of PICOT Questions with Definitions and Templates*

Type	Definition	Template
Intervention	Questions addressing the treatment of an illness or disability.	In ____ (P), how does ____ (I) compared with ____ (C) affect ____ (O) within ____ (T)?
Etiology	Questions that address the causes and origin of disease, the factors that produce or predispose toward a certain disease or disorder.	In ____ (P), how does ____ (I) compared with ____ (C) influence or predict ____ (O)?
Diagnosis	Questions addressing the act or process of identifying or determining the nature and cause of a disease or injury through evaluation	In ____ (P) are/is ____ (I) compared with ____ (C) more accurate in diagnosing ____ (O)?
Prognosis / Prediction	Questions addressing the prediction of the course of a disease.	Are ____ (P), who have ____ (I) compared with those without ____ (C) at ____ risk for/of ____ (O) over ____ (T)?
Meaning	Questions addressing how an individual or individuals experience a phenomenon.	How do ____ (P) with ____ (I) perceive ____ (C) ____ (O) during ____ (T)?

Reference: Melnyk & Fineout-Overholt (2019) p. 44.

Table 7*Example of PICOT Questions and Keywords*

Identify PICOT Components	Select PICOT Type and Template	Possible Key Words for Literature Search *Use multiple key word variations*
<p>P = Hospitalized adult patients with indwelling urinary catheters</p> <p>I = Removal of unnecessary IUCs per NDP</p> <p>C = Not applicable</p> <p>O = prevention of infection</p> <p>T = during the hospital stay</p>	<p>Type: Intervention</p> <p>PICOT Question: In hospitalized adult patients with indwelling urinary catheters (P), how does a nurse-driven protocol for removal of indwelling urinary catheters (I) affect prevention of catheter-associated urinary tract infections (O) during the hospital stay (T)?</p>	<p>Hospitalized adult patients or acute care adult in-patient</p> <p>Nurse-driven protocol or NDP or nurse-led protocols</p> <p>Indwelling urinary catheters or urinary catheters or Foley catheters</p> <p>Catheter-associated urinary tract infections or CAUTI or infection</p>
<p>P = Acute care medical-surgical nurses</p> <p>I = using the nurse-driven protocol</p> <p>C = Not applicable</p> <p>O = Removing unnecessary indwelling urinary catheters</p> <p>T = Not applicable</p>	<p>Type: Meaning</p> <p>PICOT Question: How do acute care medical surgical nurses (P) perceive use of a nurse-driven protocol (I) for removing unnecessary indwelling urinary catheters (O)?</p>	<p>Medical-surgical nurses or acute-care nurses or hospital-based nurses or direct-care nurses</p> <p>Nurse-driven protocol or NDP or nurse-led protocols</p> <p>Indwelling urinary catheters or urinary catheters or Foley catheters</p>

Figure 1*A Parallel View of the EBP and Research Processes and Interrelatedness*

References: Melnyk & Fineout Overholt (2019); Polit & Beck (2021); Tappen (2016).